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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/665,206	09/22/2003	Tetsuya Kurosawa	04173.0438	5743

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EXAMINER

OSELE, MARK A

ART UNIT	PAPER NUMBER
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1734

DATE MAILED: 02/15/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/665,206	KUROSAWA, TETSUYA	
	<b>Examiner</b>	<b>Art Unit</b>	
	Mark A Osele	1734	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 23 November 2004.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-16 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

**DETAILED ACTION**

***Claim Rejections - 35 USC § 103***

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1, 4-8, and 14-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nam et al. in view of Bura and either Cobbley et al. or the admitted prior art Nam et al. shows a method and apparatus for manufacturing a semiconductor device comprising: sectioning semiconductor elements, 72, from a semiconductor wafer; picking up the sectioned semiconductor element from a holding member, 56; sticking an element adhesive film, 68, which is sectioned according to the shape of the semiconductor element, to the back surface of the element; and adhering the semiconductor element to a semiconductor device forming base material, 66, by the adhesive film (paragraphs 0027-0030).

Bura et al. teaches that applying adhesive to the semiconductor element rather than the base material is advantageous because the semiconductor element provides an accurate gauge for how much adhesive to apply (column 2, lines 13-17). It would have been obvious to one of ordinary skill in the art at the time the invention was made to apply the adhesive film of Nam et al. onto the semiconductor element rather than the base material because Bura et al. teaches this system to yield greater accuracy of adhesive application.

In addition, Bura et al. teaches the use of a protective foil on the adhesive film adhered to the semiconductor element which is peeled off prior to bonding the semiconductor element to the base material (column 2, lines 46-53).

Cobbley et al. (Abstract, Fig. 4C) and the admitted prior art (paragraph 0008 of the instant specification) teach that stacking of semiconductor elements improves the packing density of a semiconductor board so that boards can have a smaller footprint. Furthermore Cobbley et al. teaches that the semiconductor elements are stacked to each other before being applied to the board. It would have been obvious to one of ordinary skill in the art at the time the invention was made to stack the elements of the references as combined on the semiconductor board because Cobbley et al. and the admitted prior art show that the packing density can be increased to decrease the size of the semiconductor board.

Regarding claims 4 and 7, Nam shows the adhesive film is supplied from a supply roll and cut according to the shape of the semiconductor element by mechanical cutting using a knife, 48 (paragraph 0028).

Regarding claim 8, Nam shows the film cutting section has an adsorption member, 52, for holding the adhesive film and a cutting mechanism, 48, for cutting the element adhesive film held by the adsorption member.

Regarding claims 15 and 16, Cobbley et al. shows that the semiconductor elements can be stacked with the second element protruding from the outside shape of the first element because this may be advantageous in various applications (paragraphs 0034 and 0035; Figs. 5B, 5C, 5D).

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3. Claims 2, 3, and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nam et al. in view of Bura and either Cobbley et al. or the admitted prior art as applied to claims 1 and 6 above and further in view of Sasaki et al. Sasaki et al. teaches that it is conventional to adhere a first holding member to the front of a semiconductor wafer, backgrind the rear of the wafer, apply a second holding member to the rear of the wafer, dice the wafer from the front of the wafer, and use push up pins to separate the semiconductor element from the second holding member (column 1, line 26 to column 2, line 7). It would have been obvious to one of ordinary skill in the art at the time the invention was made to add the conventional steps of Sasaki et al. into the method of Nam et al. in order to create the diced wafer of Nam et al. because these steps are shown to be the conventional approach to creating individual elements on a holding member.

4. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Nam et al. in view of Bura and either Cobbley et al. or the admitted prior art as applied to claims 1 and 6 above and further in view of Rogowski. As shown in paragraph 2 above, the references as combined show all of the instantly claimed limitations except for the adsorption member to be made of a porous metal. Rogowski teaches that porous metal plates over vacuum sinks allow for positioning of light weight sheets without deforming the sample into the pore sinks (column 4, lines 51-59). It would have been obvious to one of ordinary skill in the art at the time the invention was made to use a porous metal adsorption member in the apparatus of Nam et al. because Rogowski teaches that

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these are advantageous in preventing deformation when positioning thin sheets and the adhesive film of Nam et al. is a thin sheet.

5. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Nam et al. in view of Bura and either Cobbley et al. or the admitted prior art as applied to claims 1 and 6 above and further in view of either Wojewnik et al. or Varaprasad et al. As shown in paragraph 2 above, the references as combined show all of the instantly claimed limitations except for the cutting means to be a laser. Wojewnik et al. and Varaprasad et al. each teach that laser cutters and cutting blades are interchangeable when cutting a film to a desired shape for bonding to a substrate (Wojewnik et al., column 4, lines 43-48; Varaprasad et al., column 32, lines 27-39). It would have been obvious to one of ordinary skill in the art at the time the invention was made to replace the cutting blade of Nam et al. with a laser cutter because Wojewnik et al. and Varaprasad et al. each show them to be interchangeable for the purpose of cutting a bondable film to the shape of a substrate.

6. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Nam et al. in view of Bura and either Cobbley et al. or the admitted prior art as applied to claims 1 and 6 above and further in view of either Wojewnik et al. or Varaprasad et al. as applied to claim 10 above and further in view of Rogowski. As shown in paragraph 2 above, the references as combined show all of the instantly claimed limitations except for the adsorption member to be made of a porous metal. Rogowski teaches that

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porous metal plates over vacuum sinks allow for positioning of light weight sheets without deforming the sample into the pore sinks (column 4, lines 51-59). It would have been obvious to one of ordinary skill in the art at the time the invention was made to use a porous metal adsorption member in the apparatus of the references as combined because Rogowski teaches that these are advantageous in preventing deformation when positioning thin sheets and the adhesive film of the references as combined is a thin sheet.

7. Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Nam et al. in view of Bura, either Cobbley et al. or the admitted prior art, and Sasaki et al. applied to claim 12 above and further in view of Rogowski. As shown in paragraph 3 above, the references as combined show all of the instantly claimed limitations except for the adsorption collet to be made of a porous metal. Rogowski teaches that porous metal plates over vacuum sinks allow for positioning of light weight sheets without deforming the sample into the pore sinks (column 4, lines 51-59). It would have been obvious to one of ordinary skill in the art at the time the invention was made to use a porous metal adsorption member in the apparatus of the references as combined because Rogowski teaches that these are advantageous in preventing deformation when positioning thin sheets and the electronic component of the method of the references as combined, although not a thin film, might be damaged by bending to the shape of a non-flat adsorption member.

***Specification***

8. The disclosure is objected to because of the following informalities: throughout the specification the word "stack" is used when it appears "stuck" has the intended meaning.

Appropriate correction is required.

***Response to Arguments***

9. Applicant's arguments with respect to claims 1-14 have been considered but are moot in view of the new ground(s) of rejection.

***Conclusion***

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Lau et al. is similar to the claimed invention in showing lifting of the semiconductor element from a wafer and adhering it to an adhesive pad.

11. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the



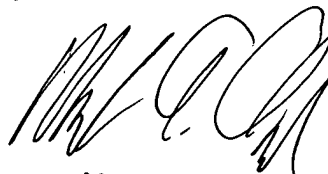
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shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mark A Osele whose telephone number is 571-272-1235. The examiner can normally be reached on M-F 9:30-6:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Christopher Fiorilla can be reached on 571-272-1187. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



**MARK A. OSELE**  
**PRIMARY EXAMINER**

February 4, 2005